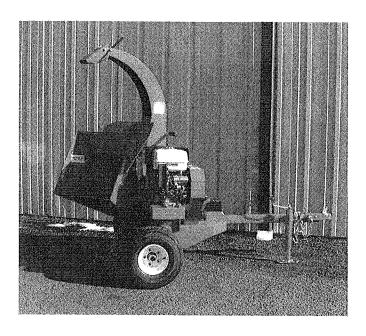


MADE IN THE U.S.A

PARTS/OPERATORS MANUAL MODELS 413H & 416B CHIPPERS



REV. 07/06

MANUFACTURER OF OUTDOOR POWER EQUIPMENT

Products for Turf & Lawncare, Rental, Construction, Tree care, Wood Processing, Nursery & Farm Industries Other Salsco Equipment

3-1/2" - 18", Gas, Diesel, and P.T.O, Wood/Brush Chippers Chipper Shredder Vacuum - Tailgate & Truckloader Vacuums up to 65 HP Shaving Mills - Gas and Electric Greens Rollers

Quality of Workmanship, Innovative Design, Built to Last!

SALSCO, INC. 105 School House Road, Cheshire, CT 06410 800-872-5726, 203-271-1682 203-271-2596 (Fax) sales@salsco.com, www.salsco.com

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STATEMENT OF FACT

You have just purchased the highest quality, most dependable, chipper on the market today. This unit has the ability to meet exact standards and perform for years with minimum downtime. HOWEVER, it cannot read nor will it understand this manual no matter how long you leave it on top of the machine.

It is your responsibility to read and understand this manual; it is also your responsibility to be certain this information is passed along to anyone who is expected to operate this equipment. Should you choose not to read, understand and pass along the information provided you, please expect equipment failure and possible injuries to persons around this equipment.

For the safety of the operator, it is **imperative** that this manual is carefully read and understood.

Once you have read this manual, it is your responsibility to be sure that all new operators read and understand this manual, especially all cautions stated.

As a manufacturer of equipment, we have a responsibility to design a safe piece of equipment. NOTE: The important safeguards and instructions in this manual are not meant to cover all possible conditions and situations that may occur. It must be understood that common sense, caution, and care are factors, which cannot be built into any product. These factors must be supplied by the person(s) caring for and operating this equipment.

ONLY YOU CAN PREVENT ACCIDENTS!!

SPECIFICATIONS & FEATURES

SPECIFICATIONS - MODEL 413H & 416B

INFEED CHUTE: 22-1/4" X 22-1/4". Plastic Strips for Safety.

EXHAUST

CHUTE: 360° Swivel Chute with Adjustable Chip Deflector. No tools necessary for adjustment:

CHIPPER DISC: 22-1/8" diameter x 3/4" thick.

CHIP BLADES: 1/2" thick x 4" wide x 7-1/4" long, Hardened & Double Sided. Qty. 2.

CHIPPER DISC

HOUSING: 7 Gauge Thick Steel Impeller Housing is Vented to Provide More Air Flow for Chip

Exhaust.

INFEED OPENING: 4" x 5".

BED KNIFE: Replaceable, Sharpenable, Adjustable - 1/2" Thick Steel.

BEARINGS: Heavy Duty, Cast Iron, Greaseable & Self Centering.

FRAME: 7 Gauge Steel Frame, Fully Gusseted for Strength.

AXLE: Tor-flex - 1000 lb. Capacity Torsion Axle

BATTERY: 12 Volt

TONGUE: 2" X 3" X 1/4" Wall, Rectangular Steel Tube. 2" Ball Coupler, Safety Chains

& 2,000 lb. Capacity, Top Wind Jack.

PAINT: Orange, Polyester Powder Coat Paint, provides excellent outdoor weatherability

& offers protection against ultra violet discoloration.

TIRES: 18.5 X 8.50 - 8

OPTIONS: 13HP Honda, Electric Start - 16HP Briggs & Stratton Vanguard, Electric Start.

DIMENSIONS: Length - 102", Width - 60", Height to top of discharge - 75". Weight - 1200 lbs.

Specifications & Options Subject to Change without Notice. Rev. 3/06

MACHINE REGISTRATION

MANUFACTU:	RED BY:	
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SALSCO, INC.

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sales@salsco.com www.salsco.com

THIS MANUAL COVERS MODEL (s): 413H & 416B CHIPPERS

This company reserves the right to discontinue, add improvements to, or change the design of any model or product at any time without obligation to improve existing machines, either by changing the design or adding new parts.

It has been and will continue to be the policy of SALSCO to update existing machines at its own discretion. Whenever possible, new designs will be made in such a way that they can be "Retro Fit" if so desired.

Record in the space provided below the model and serial number of this unit. Please retain these numbers for future reference.

No parts orders will be accepted **WITHOUT MODEL NUMBERS OR PART NUMBERS.** All part numbers are listed in this manual.

Serial Number	Model Number

NOTE: Be sure to complete your warranty card. This will insure immediate processing of any warranty claims.

READ AND UNDERSTAND THIS MANUAL BEFORE STARTING THE MACHINE

1/06

BRUSH CHIPPERS ANSI Z133.1-2006

American National Standard for Arboricultural Operations Safety Requirements

5.3 Brush Chippers

- 5.3.1 The items contained in section 5.1 shall always be included in the review of this section.
- 5.3.2 Access panels (for example, guards) for maintenance and adjustment, including discharge chute and cutter housing, shall be closed and secured prior to starting the engine of brush chippers. These access panels shall not be opened or unsecured until the engine and all moving parts have come to a complete stop (see Annex C, General Safety Procedures That Apply to All Tree Work).
- 5.3.3 Rotary drum or disc brush chippers not equipped with a mechanical infeed system shall be equipped with an infeed hopper not less than 85 inches (2.15 m) measured from the blades or knives to ground level over the center line of the hopper. Side members of the infeed hopper shall have sufficient height so as to prevent workers from contacting the blades or knives during operations.
- 5.3.4 Rotary drum or disc brush chippers not equipped with a mechanical infeed system shall have a flexible anti-kickback device installed in the infeed hopper to reduce the risk of injury from flying chips and debris.
- 5.3.5 Chippers equipped with a mechanical infeed system shall have a quick-stop and reversing device on the infeed system. The activating mechanism for the quick-stop and reversing device shall be located across the top, along each side, and close to the feed end of the infeed hopper within easy reach of the worker.
- 5.3.6 Vision, hearing, and/or other appropriate personal protective equipment shall be worn when in the immediate area of a brush chipper in accordance with section 3.4, Personal Protective Equipment.
- 5.3.7 Arborists, mechanics, and other workers shall not, under any circumstances, reach into the infeed hopper when the cutter disc, rotary drum, or feed rollers are moving.
- 5.3.8 When trailer chippers are detached from the vehicles, they shall be chocked or otherwise secured in place.
- 5.3.9 When in a towing position, chipper safety chains shall be crossed under the tongue of the chipper and properly affixed to the towing vehicle.
- 5.3.10 See section 8.6, Brush Removal and Chipping, for additional requirements.

BRUSH REMOVAL AND CHIPPING ANSI Z133.1-2006

American National Standard for Arboricultural Operations Safety Requirements

8.6 Brush Removal and Chipping

- 8.6.1 Traffic control around the jobsite shall be established prior to the start of chipping operations along roads and highways (see section 3.2, Traffic Control Around the Jobsite).
- 8.6.2 Brush and logs shall not be allowed to create hazards in the work areas.
- 8.6.3 To prevent an entanglement hazard, loose clothing, climbing equipment, body belts, harnesses, lanyards, or gauntlet-type gloves (for example, long-cuffed lineman's or welder's gloves) shall not be worn while operating chippers.
- 8.6.4 Personal protective equipment shall be worn when in the immediate area of chipping operations in accordance with section 3.4, Personal Protective Equipment, of this standard.
- 8.6.5 Training shall be provided in the proper operation, feeding, starting, and shutdown procedures for the chipper being used.
- 8.6.6 Maintenance shall be performed only by those persons authorized by the employer and trained to perform such operations.
- 8.6.7 Brush and logs shall be fed into chippers, butt or cut end first, from the side of the feed table center line, and the operator shall immediately turn away from the feed table when the brush is taken into the rotor or feed rollers. Chippers should be fed from the curbside whenever practical.
- 8.6.8 The brush chipper discharge chute or cutter housing cover shall not be raised or removed while any part of the chipper is turning or moving. Chippers shall not be used unless a discharge chute of sufficient length or design is provided that prevents personal contact with the blades (see Annex C, General Safety Procedures That Apply to All Tree Work).
- 8.6.9 Foreign material, such as stones, nails, sweepings, and rakings, shall not be fed into chippers.
- 8.6.10 Small branches shall be fed into chippers with longer branches or by being pushed with a long stick.
- 8.6.11 Hands or other parts of the body shall not be placed into the infeed hopper. Leaning into or pushing material into infeed hoppers with feet is prohibited.
- 8.6.12 While material is being fed into the chipper infeed hopper chute, pinch points continually develop within the material being chipped and between the material and machine. The operator shall be aware of this situation and respond accordingly.
- 8.6.13 When feeding a chipper during roadside operations, the operator shall do so in a manner that prevents him or her from stepping into traffic or being pushed into traffic by the material that is being fed into the chipper.
- 8.6.14 When using a winch in chipper operations, the operator shall ensure that the winch cable is properly stored before initiating chipper operations.
- 8.6.15 Refer to section 5.3, Brush Chippers, for additional information.

CAUTIONS

READ THOROUGHLY THE OPERATOR SAFETY INSTRUCTIONS ON THE FOLLOWING THREE PAGES, WHICH ARE THE AMERICAN NATIONAL STANDARD OF POWERED SHREDDERS/GRINDERS, SAFETY SPECIFICATIONS PROVIDED BY ANSI AND THE O.P.E.I.

THE FOLLOWING CAUTIONS ARE PROVIDED BY SALSCO AS A QUICK REFERENCE ONLY AND ARE NOT MEANT TO REPLACE THE PRECAUTIONS ON THE FOLLOWING PAGES.

- 1. ALWAYS use protective eyewear when machine is in operation.
- 2. ALWAYS use gloves and wear ear protection when machine is in operation.
- 3. **NEVER** put hands, legs or any part of your body into or near Chipper intake or discharge openings.
- 4. **NEVER** run with guards removed.
- 5. **ALWAYS** allow machine to cool off, remove key and put engine in neutral before attempting any maintenance, or repair.
- 6. **BE SURE** machine has stopped completely, engine is off, key is removed and spark plug is disconnected before attempting any service or maintenance.
- 7. **NEVER** stand in front of chipper infeed hopper. It is possible for a chip or piece of wood to be thrown out.
- 8. **BE SURE** the machine is parked on a dry level surface before starting operation.
- 9. **DO NOT** operate with loose clothing or long unrestrained hair. Be sure vines and branches are not wrapped around your body parts.
- 10. **DO NOT** operate on ice or any other slippery surface. Be sure area around machine is clear and clean. You do not want to trip into the machine.
- 11. **NEVER** leave machine running unattended, especially around youngsters or persons not instructed in the safe operation of this machine.

READ and understand federal guidelines provided with this manual.

OPERATING INSTRUCTIONS

- 1) Be sure all guards and covers are in place.
- 2) Check all chambers to be sure they are free and clear of debris.
- 3) Set direction of discharge chute.
- 4) Start engine, bring up to full R.P.M.
- 6) Begin feeding material into the machine. **NOTE:** You should be standing, looking at the infeed hopper opening, as you place material into the machine. Turn to your left and exit the area. Go and get another branch, do not worry about the chipper, it will take care of itself. Should there be any wood left in the infeed, it will be taken care of by the next branch. **DO NOT REACH INTO THIS MACHINE FOR ANY REASON!**
- 7) When you are done chipping, let the machine come down to an idle for a few minutes before shutting down.

HINTS

- When operating machine, stand off to the side of the feed hopper when feeding wood into the machine. NEVER STAND DIRECTLY IN FRONT OF THE FEED HOPPER WHEN FEEDING WOOD INTO THE MACHINE.
- When using the chipper and you have a short piece of wood bouncing around and not being grabbed by the feed roll, **LEAVE IT! DO NOT TRY TO PUSH IT THROUGH WITH ARMS OR LEGS!** The next limb will push it through.
- When through with the job, make sure all material is run through the machine before shutting it down. This will prevent any injuries from flying debris when the machine is started up at the next job.

REMEMBER! A CHIPPER WILL ONLY LET YOU MAKE A STUPID MISTAKE ONCE!

SERVICE SCHEDULE

1. **Grease** all main bearings once a day. DO NOT OVER GREASE. Wipe extra grease off bearings.

2. Be sure to **clean** entire machine. Should it become necessary to remove the exhaust chute, to clean out the machine, make sure the key has been removed from the engine.

- 3. Sharpen/change chipper blades: REMOVE KEY FROM ENGINE. Remove bolt on impeller housing. Open impeller housing to expose impeller and chipper blades. Do not reach in and hold impeller with your hand, instead use a piece of 2" x 4" wood to push impeller housing. When you reassemble, be sure to use Locktite. We use Locktite, Blue 242, removable at the factory. It is also advisable to discard bolts and replace them with new bolts. Sharpen blades as you would sharpen a lawn mower blade, under angle edge only. Sharpen blades as evenly as possible. REMINDER! SALSCO, INC. has a blade sharpening service. Call SALSCO, INC. for full details, 800-872-5726.
- 4. **Recommended Bed knife adjustment** is 3/16" from chipper blades. When adjusting bed knife, check the distance on all chipper blades. **MAKE SURE** all bolts are tightened properly after adjusting bed knife.

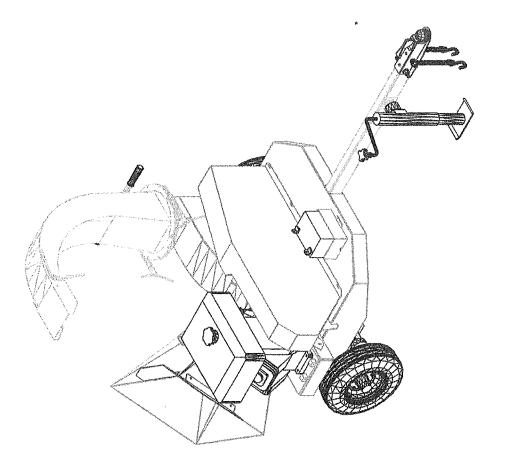
HINT: It is strongly recommended to have a set of blades and screws on the shelf, to prevent downtime while blades are being sharpened.

HINT: Blades need sharpening after approximately 8 - 15 hours of use.

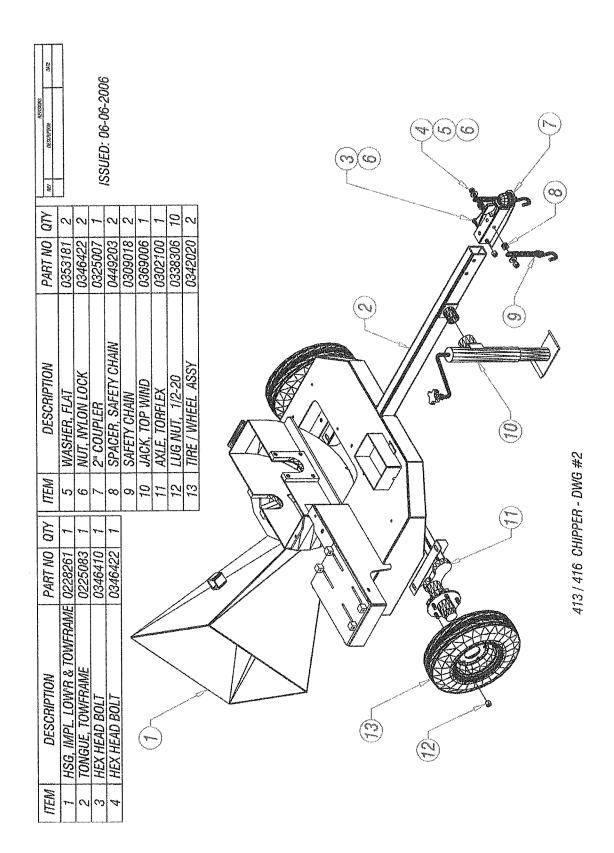
SERVICE SCHEDULE	AS NEEDED	DAILY	WEEKLY	MONTHLY
CLEAN MACHINE	X	X		
GREASE DISC SHAFT BEARING	X	X		
SHARPEN CHIPPER BLADES	X OR		X	
CHECK & ADJUST BED KNIFE	X OR		X	
CHECK ALL NUTS & BOLTS	X	X		

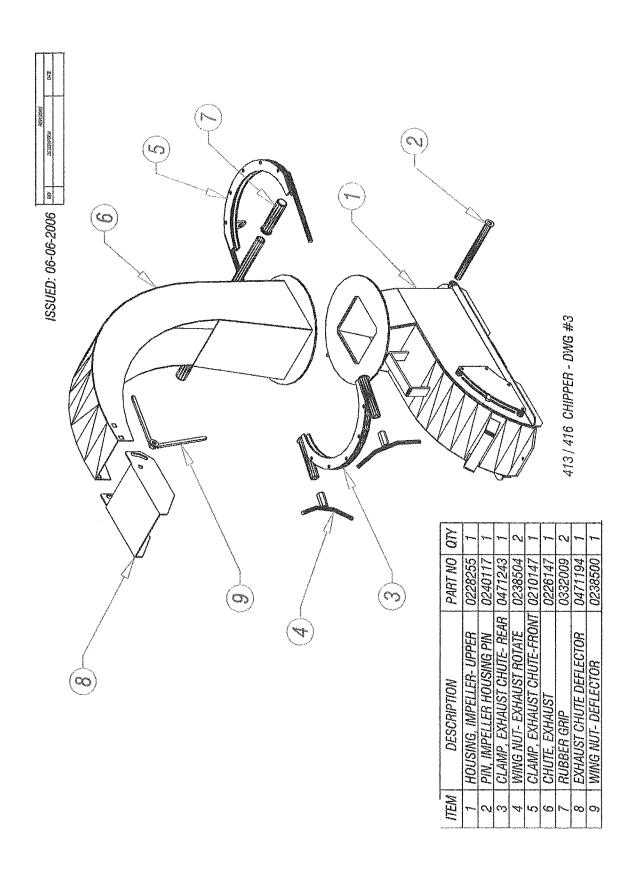
CHECK ENGINE MANUAL FOR ENGINE MAINTENANCE SCHEDULE

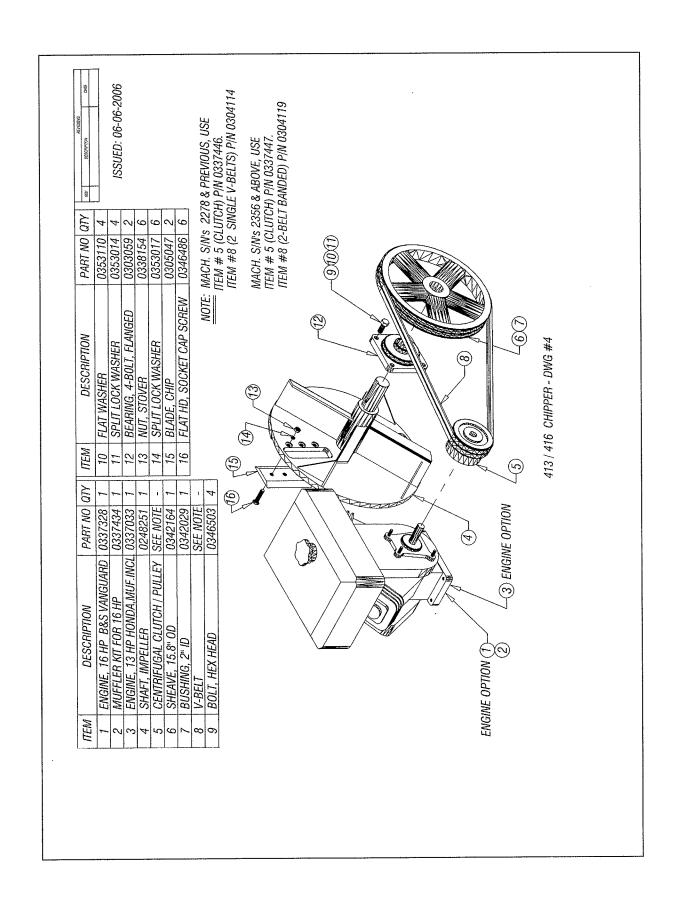
NEVER, UNDER ANY CIRCUMSTANCES START THE ENGINE WHEN UNIT IS OPEN OR AT ANY TIME DURING SERVICE OR ROUTINE MAINTENANCE

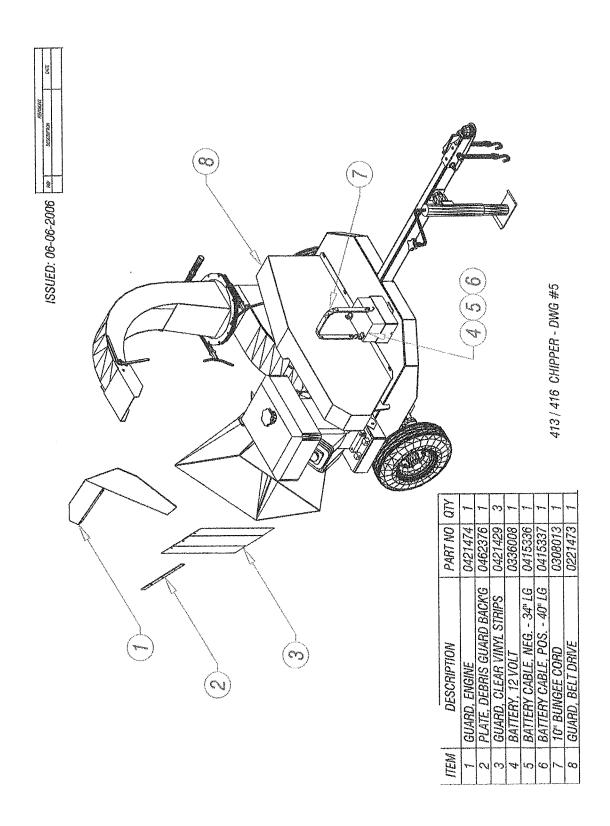


413 / 416 CHIPPER ASSY - DWG #1







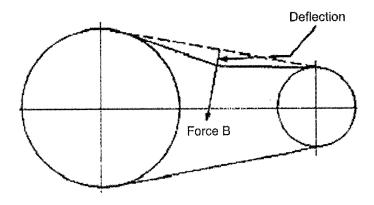


Below is a quick reference chart for various "Flat Head Cap Screws" and the torque recommendations.

VALUES ARE STATED IN FOOT POUNDS

BOLT SIZE	Thds Per Inch	SAE Grade 5	SAE Grade 8
1/4	20	10	14
, .	28		
5/16	18	19	29
	24		
3/8	16	33	47
	24		- or us
7/16	14	54	78
	20		
1/2	13	78	119
, 2	20		
9/16	12	114	169
	18		
5/8	11	154	230
	11	, 	
3/4	10	257	380
	10		
7/8	9	382	600
	9		
1	8	587	700
	8		

Drive Belt Tension Measurement by Deflection



Deflection should be 3/8" when 8-12 lbs. push is applied at "B"

WARRANTY POLICY

Please remember to complete and return your Warranty Card and Dealer Delivery Report. Warranty Claims will not be considered if the Warranty Card and Dealer Delivery Report have not been returned to Salsco.

Your Salsco Commercial or Turf Equipment product is a commercial type product and is normally manufactured and sold for commercial or industrial use. Salsco will, for the original purchaser, for one (1) year from the date of purchase (90 days if used for rental purposes) repair or replace, free of charge, any SALSCO part or parts found to be defective in material, workmanship or both. Any transportation or shipping charges will be borne by the purchaser. If, during the warranty period stated above, the product does not function properly due to defect, simply contact Salsco and follow the Warranty Procedures included in this manual.

This warranty does not include:

- Incidental or consequential damages and is exclusive of any implied warranties.
- Normal maintenance parts, including, but not limited to hoses, chains, belts, filters, lubricants, etc.
- Parts or components, which are covered under the original manufacturer warranty, including, but not limited to engines, pumps, and
 motors.

WARRANTY PROCEDURE

In order for Salsco to consider your warranty claims in a timely manner you must follow the simple procedures listed below:

MACHINE OR PART FAILURE

- a) Call our service department for helpful instruction on how to correct or repair the problem. Preventive maintenance will also be suggested.
- b) When ordering parts for Warranty issues, you MUST retain possession of the old parts in question until notified with respect to returning the parts to Salsco or other disposition.
- c) Warranty Claims MUST be filed within 30-days from completion of the work performed. Contact our office for an electronic warranty claim form.
- d) Fill in all information requested on warranty claim form, a copy of which is included in this manual, (date of purchase, company name, address, etc.). List all parts used. Make sure part numbers are correct. You can obtain these from your manual. (include good description of problem; i.e. "leaking from spool" rather than "leaking").
- e) It is our goal to consider and reach a disposition on each Warranty Claim within 30-days from the date that it is received. Therefore it is important that you respond promptly to any request for further information. Claims with no response to inquiries will be closed as "denied for lack of response" 90-days from the date of request.
- f) Email, Fax or Send Warranty Claim form to our Warranty Department. Warranty on parts most often requires return of the parts that were replaced. DO NOT DISCARD OLD PARTS UNTIL YOU HAVE RECEIVED A DETERMINATION AS TO WHETHER THESE PARTS MUST BE RETURNED.
- g) Our Warranty Department will contact and instruct you on how to return the Parts to Salsco on an RA #. Returns MUST be made within 30-Days from issuance of RA #. FREIGHT CHARGES ON RETURN OF PARTS IS THE RESPONSIBILITY OF THE CUSTOMER. Normal pre-delivery adjustments are not covered under warranty. Labor Warranties are based on reasonable time allowances as determined by Salsco, Inc. and paid at 75% of posted labor rate. TRAVEL TIME IS NOT REIMBURSED UNDER THE WARRANTY POLICY.
- h) Be sure to put the RA form inside the box that you are shipping back, also be sure to put on the outside of the box "Return of Goods" and the RA #.
- i) Ship returns via a traceable method such as UPS Ground Service. Be sure that the shipment is insured for the appropriate value. If uninsured parts are lost, we cannot issue a credit.

PLEASE NOTE: Warranty forms should be filled out completely.

PREVENTIVE MAINTENANCE IS YOUR BEST INSURANCE AGAINST EQUIPMENT FAILURE. BE SURE TO READ THIS MANUAL, ESPECIALLY THE MAINTENANCE, OPERATING AND CAUTION SECTIONS.

SALSCO, INC., 105 School House Rd. Cheshire, CT 06410 800-872-5726, 203-271-1682 203-271-2596 (Fax) sales@salsco.com, www.salsco.com

WARRANTY CLAIM FORM

Salsco, Inc. 105 School House Road Cheshire, CT 06410

Phone: (203) 271-1682, (800)872-5726 Fax: (203) 651-0072 sales@salsco.com www.salsco.com

<u></u>				
Name: Phone:		WORK OR	DER#:	
E-mail: Fax:		Office Us	e Only	
Address:		Date Rece	ived:	
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Warranty Claim/Work Order#:		Reason to	Rejection	····
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Return of parts? YES NO If Yes RA#		Cummonto	d Desugneti	en Mainte
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Work Performed/Comments on Repair:				
		<u> </u>		
Shop Labor Rate:	SUBMITTED BY	4		
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PARTS REQUIRED FOR REPAIR				
SALSCO PART# -Description	Qty	Price Ea.	Total	Inv.#
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INCOMPLETE FORMS CAMMOT DE PROCE	COLUMN TRIBLE MIN. 1		ony norte	that brook
List all parts used. Make sure part numbers are correct. Any parts t	hat you believe to be	delective of	ally pails	mar nicar

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Manuals/WARRANTY CLAIM FORM

SERVICE RECORD

If kept properly, this schedule will help track problems in the future.

					Total Hours
Date	Qty.	Part #	Description of Work Done	Hours Used	to Date
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MODEL #	S/N	
		DATE DUDCHASED: